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WHOLE No. 2448.

PACIFIC CABLE HAS BEEN LAID TO WITHIN A SCORE OF MILES OF HAWAII

Silvertown Enters This Port After Rough and Sensational Voyage.

(From Saturday's Daily.)
LYING in 450 fathoms of water, attached by a strong line to a buoy which rides the waves above, indicating the presence and furnishing the connection with the strand beneath, the cable which means the advent of the new Hawaii, is now within twenty miles of the Island shores.

After twelve days of such cable laying as has never before been experienced by the experts aboard the vessel, days when the question of cutting the cable was uppermost in the minds of all, as the only means to save the precious line, the Silvertown, yesterday morning, when two hours' steaming off Makapuu Point east overboard the end of the first stretch of the Commercial Pacific cable and ran into this harbor to look over the ground and reef before undertaking the putting down of the local shore end and the intermediate weight line, which will connect the so-called rock cable with the deep sea line, which is now off the lee coast.

It was a great feat, the laying of the cable, and the men who carried it through successfully were received with acclamation when they arrived at their destination, for the Silvertown will have finished its task when the cable yet to be put down, some thirty-five miles in all, is under water and connected, and the remainder of something like 250 miles rests in the cable tank on the lee reef. Met off the harbor by prominent men of the city the ship was cheered, its men were greeted with a hearty aloha and the music of the band helped to make the occasion of the coming of the vessel which will have bridged the distance between continent and islands, one memorable to citizen and visitor alike.

Disturbed by the reports from Fanning, heartened by the news in the San Francisco journals and made jubilant by the telephone from Waimanalo before 10 o'clock yesterday morning that the great ship was coming, the people of Honolulu, despite post-holiday solitude seeking, turned out in numbers to see the Silvertown. The Eleu took to the offing where the cable vessel was undergoing examination by the port physician, the officers of the government, and the Ke Au Hou had a crowd of the general public, while special guests of Irwin & Company went out in the Fearless. The band was on the tug and there was music all the way into the naval dock, where the ship is now berthed.

It was a tale of high seas and the putting out of a buoyed cable end that the officials on board told. The seas swayed the light vessel so that to splice and lay the intermediate cable was impossible, and so the end was marked and dropped and the ship came in for coal which will put it down so that some steadiness will result.

MAY LAND TODAY.

While nothing can be said as to the movements looking to the completion of the work, it is believed that the shore end of the cable will be laid off Sans Souci this afternoon. The plan will be announced this morning and the laying of the mile or more of cable will take place as soon as possible thereafter. The only trouble now encountered is to secure a power lighter to carry the thirty tons of special armored cable inside the reef and close to the shore. If this cannot be done then the great wire wound conductor will be transferred from the ship by its own small boats.

The task will not consume many hours and the question then will be the putting down of the intermediate cable which weighs about fifteen tons to the mile, and which will reach from the mile of rock cable to the junction with the deep sea conductor, which weighs only 1.844 tons to the mile. The work to be done will require time, principally owing to the splicing to be performed. The cable will not be laid in deep water, in comparison with what has been passed, as during the trip the ship put down cable in an average of 2650 fathoms, reaching above 3000 and getting as shallow as 2400 out in the sea.

There will be special invitations for the witnessing of the laying of the shore end, and the recipients will be the guests of the Commercial company at the premises of Mr. F. M. Hatch. The lands of the company are too small and those of the neighbor have been tendered. Admission will be entirely by ticket, issued by the company. The connection is yet in the distance, but

it will not be beyond the first of the week, the time depending somewhat upon the subsidence of the storm on the north.

HOW THE LINE WAS LAID.

The foretaste of the Pacific's way of receiving the thread which will soon cross from side to side and complete the exploration of the depths of the great sea which was had by the engineers of the expedition on Friday, December 12, when the unsuccessful attempt was made to put down the San Francisco shore end was more than fulfilled by the experiences which crowd the record of the twelve days' cable laying. Rough and boisterous was the treatment bestowed upon the great ship which, as its precious load was laid upon the floor of the ocean, became more and more the toy of the wildest waves which have been seen along the track of the steamships between San Francisco and Honolulu for many years.

The story of how the surf beat back the boats and rendered unsafe the laying of the slender cable has been told and the trip of the vessel described through the brief bulletins which passed between the ship and shore at noon each day. Then alone was the line used for speaking purposes. Every other minute of the day there were being pressed the tests, which were continuous and exhaustive, each minute the cable, as it passed over the great wheels at the stern of the ship, showing that no damage had resulted from its wearing as it sped to its resting place on the floor hundreds of fathoms below. These tests were made, not only on board the ship, but when the California shore was left behind, there were in the cable hut facing the west four men whose duty it was to constantly watch the fluctuations of the spot upon the scale. It was a matter of arrangement when the tests should be discontinued so that the day's reports could be made. The hour of meridian is usually chosen, for the observations made at that time show the position of the vessel and enable the engineers in charge to make comparison of the work they have done during the run.

So careful are the men who do this that it was five minutes less than an hour between the time that the Newsboy, the steam lighter, had carried off the shore end of the cable from the California coast to the Silvertown, laying seven miles out at sea, and the receipt of the first signal from the shore, telling that the connection was made, was perfect, and that the prow of the ship might be turned to the southwest and the eventful journey begun. This was a work of only a few minutes, for when the shore end was received from the Newsboy it was taken in over the bow, but there was a loop to the stern, which was gently lowered into the sea, the strain was taken by the paying out drum, the propeller began to revolve as the vessel's head swung into the course, there was nothing in the way of machine or electrical connection or apparatus which did not respond to the touch of life, the order for the cruising speed was given, and at a half hour past midnight on Sunday, December 14, the actual start of the Silvertown, with seven miles laid which do not appear on her reports as they were taken from the lighter, was made and reported.

STORMS MARK THE JOURNEY.

Out into the darkness of the night, with the slender thread of copper and its multiform coverings, steamed the Silvertown. There was little sea on at the time, but everything had to be smoothed up, and the speed was a little below the seven knots. This speed was maintained till close to 11 o'clock, when the hitherto smooth sea took on the grey of an approaching storm, and the hour between the time when the barometer began to fall and the noon reckoning was one which gave promise of approaching troubles. When the count was made up at noon it was found that 70 miles had been traversed, and as the ship's new day began the motion of the Silvertown took on several new things in rolls, and early in the afternoon the rails were under water and seas were shipped with each toss of the vessel.

During the night the seas increased, the wind coming from the west, and as the head of the vessel was to the southwest there was a nasty cross sea, accompanied by a roll which made life aboard anything but pleasant. Tuesday morning broke with the vessel making ground and lofty rumbles, green water spraying over the bridge,

and the men who were compelled to move about doing so by the aid of ropes which were stretched from end to end of the decks. It was a terrible time for men and cable together. Seas broke over ladders, smashed in lights and flooded galley and starboard saloon, and two of the minor help were injured. Through it all the vessel held to the southwest, and despite the desperate pulling of the cable strand there was perfect control maintained.

More than once on that Tuesday there was seriously considered the cutting and buoying of the cable, but the excellent management of the ship by Captain Morton, and the superb handling of the cable machinery by Engineer Benest and his capable corps, prevented recourse to this heroic treatment, and the day and night were weathered, the storm abating in the evening, though seas continuously swept the deck and made life above the hatches a problem. During the period between noon of the 15th and noon of the 16th only 182 miles could be logged. The Wednesday was a good day, however, the sea smoothing out its ruffles and giving the navigators an idea of how nice the Pacific could treat strangers. It was with a record of 195½ miles that the noon report was made, and the outlook was for the same kind of fast work during the remainder of the trip. Thursday's record was better, with 207 miles and a total of 661 for the half of the week which had been passed, and with the promise of further trouble, for a falling barometer gave indication of worse luck ahead.

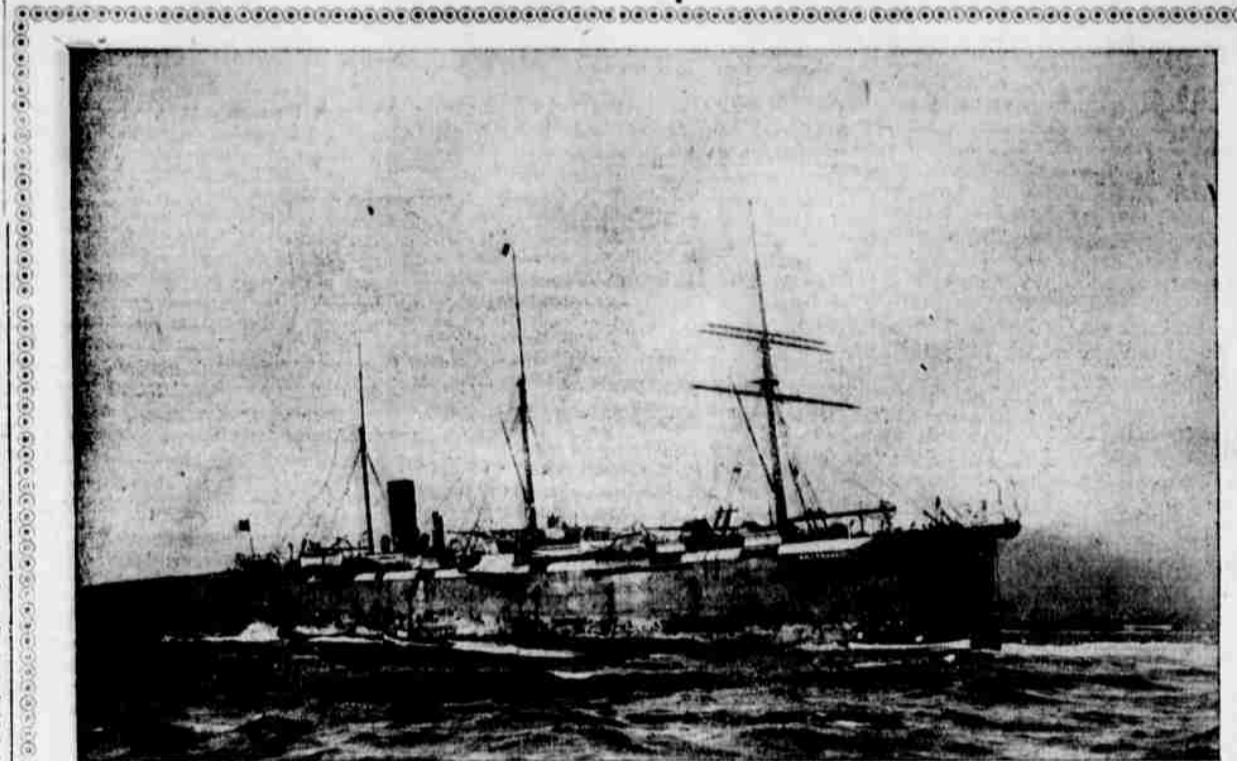
The Friday after the false start had been made saw a perfect day, but owing to the fact that the main tank of cable had been exhausted, there having been taken out 929 miles of cable, there was a delay of about an hour during the evening in changing, which cut down the record to 204 miles. There was little out of the ordinary which marked the week end, the vessel, relieved of nearly half her cargo, rolling like mad, and the speed being maintained at about eight knots, the days' work netting 189 miles. Sunday just seven days out from California, was the most perfect day of the entire trip and the men, both in the engineers' department and in the management of the ship, felt that the worst was passed.

LAST WEEK OPENS.

Monday was marked by two events. The British cable was crossed at 4 o'clock in the morning and the California folk sent some news of the outside world for the workers afloat. There was some increase in the seas and the winds and the appearance of another storm was imparted by the choppy seas which rose and sent the great ship rolling about like a porpoise. The record showed 211 miles for the twenty-four hours. The first real accident of the trip was recorded this day, owing to the slipping of one of the men whose duty keeps him in the tanks, where, with a score of others, he watched the unclogging, assisting in it, of the great circles of the cable, was caught by the running strands and suffered the dislocation of his shoulder, as well as many bruises.

Tuesday of this week marked the most unusual weather of the entire cruise, for it was decidedly uncommon for the latitude in which the ship then was. The great vessel was rapidly losing its load, and in consequence became more and more the sport of the waves which swept over the rails. The roll was something terrible, and the handlers of the slender cable had a bad night of it. Another man was caught in a coil and had to go to the sick bed; but despite wind and sea the day netted for the record of progress 197 miles.

The end was approaching and everyone was ready to welcome it, for between the westerly winds and the light draft of the ship there was a roll which made it far from pleasant, even for the men whose lives had been spent in the business of cable laying. The wind did not freshen, though, and Wednesday was greeted with applause, for the sky cleared and the ship rolled right along, adding the score of 207 miles to the long line of strand which then connected the California coast with the mid Pacific. The first vessel of the trip was sighted, a schooner far off to the south and bound for the coast. The day's work, too, showed the deepest valley of the ocean's floor. The average, closing with the noon hour, indicated that the cable of the day had dropped into 3000 fathoms, the deepest point being 3003 fathoms.



THE SILVERTOWN ARRIVES.

(Photo by Rice & Perkins.)

STORM ON THE COAST.

There was to be no holiday for the busy men aboard the ship, though the holiday feeling was there and everyone, from chief to scullion, was in fine humor over the fact that 500 miles would bring sight of land. The morning showed a cool strong breeze and the sea was running with vigor, causing the ship, which now showed nearly twenty feet of free board, to roll almost to the dangerous angle. The second change of tanks, this time from the after one to the fore tank, was made during the night without trouble, and the last leg of the work was fairly on. The noon hour-observation showed that 215 miles for the day had been passed, and that 2,169 miles of cable had been dropped into the sea.

But the afternoon and evening were such as to try the hearts of the bravest of all. The wind which swept as a gentle breeze through the rigging all day turned into a gale and howled over the rolling craft. Empty, almost, the vessel turned on the sides, the angle of rolling passing forty degrees, and the life boats on the upper davits being dipped into the green seas which went swirling over the decks. The officer of the deck was lashed into his place and the quartermaster was kept busy holding his place beside the wheel. The pitch of the light ship was increasing and the screw half exposed in smooth water, often raced as the seas lifted the stern high out of water.

Men who have given the better part of a generation to the laying of submarine cables admitted their impotence to cope with the conditions. To no subordinate did Mr. Benest and his chiefs leave the watching of the cable as it was drawn out of the tanks and dropped into the foaming waters, which, radiant with phosphorescent glow, stretched in mountains astern and ahead as well. All night the men with eye and hand upon the brakes which held the great drums, regulating the speed of the cable, into the ocean, stood to their task and when the relief came, it meant only that two men instead of one watched the working of the machinery. Capt. Morton had figured that at the end of the deep sea line should be dropped at 3 a. m. and all hands were ready for the task, which it proved was to be one which tried the mettle of the men engaged in it.

The pitch of the ship increased, until the cable was drawing with something like five tons pressure upon the drums and brakes. It was a serious question if the pitching of the ship would not make it necessary for the slender strand to be cut and sent adrift rather than to risk the possible serious damage to the machines by the tugging which marked each plunge of the ship. At length the records showed that 2,239 miles of the cable had been sent overboard. It was the end of the sea line and the time for the splicing of the intermediate cable. But this could not be done. With a ship so light it was impossible for the men to hold it to the sea and so it was decided to buoy the cable and make for Honolulu, there to take in coal and be ready for the final task. There were two jobs, however, for the buoy, a great iron tank twenty feet high and as much in diameter, had to be handled, and it was a job which meant risk. But it was done, the sounding apparatus showed 40 fathoms and with a manila cable best on to the chain of the buoy, and all made fast to the cable the end was sent adrift at 3:40 o'clock. It was a fearful and terrible hour. The wind was blowing in gusts, the force of the pitching eight or nine, hurricane dimensions, and the moment when everything was ready to send off the great buoy and the end of the line to San Francisco came at a most untoward moment.

CABLE SENT ADRIFT.

The wind suddenly gained in

strength. The ship rolled and tossed and the strain on the cable was terrible. To those who were doing all that ingenuity and skill could do for the safety of the cable, it was a trying moment. The men who were making fast the lines and swinging out the buoys, grasped the stanchions for safety as a mighty wave sent the ship high into the air, and the thrashing screw added its roar to the thunder of the winds great guns above. All was ready and the cable was let go and the manila rope went singing through the sheave, burying itself as it sped, and then all was quiet except the elements, and the searchlight showed the red buoy floating on the waves. The lights went out and for a moment all was confusion. A mile was traversed and then a second buoy with a light which will burn for ninety hours was set out as a guide with which to find the cable buoy.

It was done and the only thing was to make for Honolulu harbor to refit and lay the shore end and intermediates and thence back for the dropped section of sea cable. The position of the ship was known only by dead reckoning and it was figured that land could not be more than twenty miles away so there was nothing done but keeping the head of the ship into the seas. Dawn showed Makapuu Point and at once speed was made and the vessel, reported first from Waimanalo, was off the harbor at 11 o'clock and came to berth in the naval slip at noon.

It was a dramatic and terrible ending to a trip which is for many of the experts the worst ever made. The ship was adrift almost, the weather was terrible and the seas which swept over the ship and the drifting about of the dunnage made the scenes memorable for all who were on board, and yet there was no serious damage done and the vessel was kept on the course, dropped the cable just where it was intended and quit just where the instructions showed it wise.

But there was no holiday for the men, and after they had come to port yesterday there was a decided period of quietness, for the men were played out. Captain Morton and Chief Benest were not seacore, and down to the mildest man of all there was a desire to rest.

AN INTERESTING CRAFT.

There is no more interesting ship afloat than the cable steamer Silvertown, unless perhaps it be another vessel of the same type. The Silvertown, to an outsider, is a mass of machinery, a perfect maze of wheels and cylinders, but to the electrical men on board it is the simplest kind of a toy, although one that is played with seriously. A run straight through the vessel would bring out enough information to fill a cyclopedia. A reporter was taken by one of the engineers over the whole vessel. He explained how the cable machinery had been worked during the whole voyage.

Starting with the main cable tank, a great cavity in the vessel large enough to take the whole cargo of many a large sailing ship, from which 964 nautical miles of cable had been paid out, one sees machinery after machinery in every direction. When the engineers found they had but fifty or sixty miles of cable remaining in the main tank they took the end of the cable leading up from the bottom of the tank and spliced it to the end of the cable in the after tank. This was a work of three or four hours, and during all this time the cable was being paid out at the regular rate. When it was discovered that but a short piece of cable was left in the main tank the vessel was stopped so that the remainder could slide out easily without making too big a jerk on the part with which it was connected in the after tank. The delay in this case was less than five minutes. Then the 361 flasks of cable, each flask contain-

ing 3.8 nautical miles, was paid out from the after tank, and the operation of splicing the end of this with the end of the cable in the fore tank of the vessel was carried on. Some cable, consisting of the big shore end, still remains in the after tank, and all the cable in the fore tank had not been paid out at the time the line was cut and buoyed near Molokai channel yesterday morning.

CABLE RACING THROUGH WHEELS.

If one were to mark with chalk a portion of the cable and watch it as it left the vessel's tanks he would have seen some lightning like work. Down in the tank itself the cable was coiled around a big drum, and frames known as crinolines kept the cable from mixing up, while a dozen men were always stationed in the tank to keep the cable in good shape. As it went up from the tank it went along through a metal trough until it reached a big drum, round which the cable was wound several times. This drum was fitted with many powerful brakes, and these were connected with a dynamometer through which the cable passed. This registered the strain on the cable, and when the strain became too heavy a man watching the dynamometer operated the brakes of the big drum. After leaving this instrument, the cable passed to the massive wheels which are situated at the stern of the vessel and glided down into the sea.

As the cable paid out over these massive wheels it slowly sank to the bottom at the rate of one and a half to two feet per second. The direction in which it sank was twofold, sliding and falling, sliding down the inclined plane of descent and falling by gravity in a direction parallel with itself.

TREMENDOUS WEIGHT OF CABLE.

The weight of the cable at times was tremendous. When the vessel was laying cable in 2,000 fathoms of water the ground end of the cable was twenty miles astern and as the cable left the vessel it took nearly three hours for it to strike the bottom. During this time the speed of the vessel was seven or eight knots an hour, but the cable was moving much faster as the cable had to go up and down over hills and valleys and was longer than the distance the vessel traveled over the sea level.

During all the time that this cable was being paid out electricians were constantly testing it. In the testing room connections were made with the shore house at San Francisco, where four other electricians were posted. Work was being done every moment, so that a fault in the cable could not possibly occur without the electricians knowing it.

While all soundings were made for the cable before the Silvertown started on her voyage, the vessel still had to make soundings very often. She also had to have difficult navigation performed. She could not simply take the most direct route to Honolulu, but had to go over exactly the same route as the United States Fish Commission steamer Albatross did in making the original soundings, and in order to do this the navigators of the Silvertown took more observations than are ever taken on any battleship or big passenger liner. By day a close watch was kept upon the sun, and at night the stars required the closest of study.

Right at the stern of the Silvertown her steam sounding gear is located, and this works the minutely thin but apparently endless wire that tells how far it is to the bottom of the sea.

THE TAUT CABLE.

On the port side of the vessel one could find a second cable apparatus. This was the "second cable," for two cables are laid by the Silvertown.

(Continued on Page 2.)